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Device for dispensing adhesive

The present invention relates to a device for dispensing adhesive according to the preamble of patent claim 1. Various devices for dispensing adhesive, which are used above all for dispensing adhesive onto floors for the laying of parquet flooring, are known, these devices having a container for adhesive, which is connected to a dispensing nozzle. When these devices are used, adhesive is conveyed out of the nozzle onto the floor, and it is as a rule necessary to distribute the adhesive by means of a spatula, this work not only being laborious but also leading to work clothes being soiled.

Starting from this known state of the art, it is an object of the present invention to indicate a device for dispensing adhesive which guarantees more efficient application of adhesive to the floor and allows working with this device to be carried out in a way which is not only kinder to joints but also cleaner. A device which achieves this object is indicated in patent claim 1.

In a preferred embodiment, the glue strip of the device is easy to clean, and, in further developments according to dependent claims, the device is environmentally friendly as a very small amount of waste arises.

The invention is explained in greater detail below with reference to drawings of illustrative embodiments, in which:

Figure 1 shows a side view of a first illustrative embodiment of a dispensing device according to the invention;

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Figure 2 shows another side view of the device from Fig. 1;

5 Figure 3 shows a view from above of the device from Fig. 1;

Figure 4 shows a side view of a second illustrative embodiment of the device according to the invention;

10 Figure 5 shows another side view of the device from Fig. 4;

Figure 6 shows the device from Fig. 4 from above;

15 Figure 7 shows a side view of a further illustrative embodiment of the device according to the invention;

20 Figure 8 shows the device from Fig. 7 from above;

Figure 9 shows a plan view, partly in section, of a further illustrative embodiment of a device according to the invention, and

25 Figure 10 shows a section along the line X-X in Figure 9.

The first illustrative embodiment, the dispensing
30 device 1, comprises two adhesive cylinders 2 and 3 and also an adhesive strip 4 and a compressed-air supply arrangement 5. The adhesive cylinders 2 and 3 serve to receive adhesive bags (not drawn here) and have, for dispensing, a piston 6, which has a sealing ring 7, in
35 order that the compressed air does not flow off around the piston and thus reduces the pressure, and a nose-shaped front part 8, the shape of which corresponds to the funnel-shaped inlet 9 of the nozzle 10.

Arranged between the cylinder outlet 12 and the adhesive strip is a nozzle 10, which leads to a cavity 16, starting from which ducts 11a - 11g are arranged, which end in dispensing openings 14a - 14g in the adhesive strip. The cavity 16 ensures that the adhesive is conducted uniformly to all dispensing openings, which makes uniform application possible. The dispensing openings and their mutual spacing are adapted to the various parquet strip widths.

The adhesive strip 4 consists of two mutually complementary parts 4A and 4B, the two parts being interconnected by cheese-head screws 13. The adhesive delivery is determined and regulated by the size and number of the dispensing openings, the speed of travel and the system pressure.

The nozzle is let-in in the adhesive strip 4 and cannot fall out after the two-part adhesive strip has been screwed together. The adhesive strip is, with the nozzles, attached to the adhesive cylinder by means of a nut 12M.

The entire adhesive strip is coated with an adhesive-repellent plastic, for example with Teflon®. By virtue of this, the adhesive does not cling to the strip after setting and can easily be removed, by virtue of which the adhesive strip can be cleaned rapidly. In order that the adhesive strip does not touch the floor during use of the device and consequently the Teflon® layer is not damaged, rollers 15, which are attached to the strip via, for example, a deep-groove ball bearing, are located at both ends of the adhesive strip. The two adhesive cylinders are held together by two spectacle-type supports 17 and 18, which can be adapted to the various adhesive strips or exchanged according to adhesive strip type.

The two illustrative embodiments according to Figures 1 to 3 and 4 to 6 are operated by means of compressed air. The external compressed-air supply takes place via a supply hose 19, which is connected via a connection 20 to a handle 21, from which the internal compressed air is conducted to the various adhesive cylinders. The handle 21 is attached to the adhesive cylinder 2 by means of a clamping ring 22 and has a push-button valve 23, which is acted on by the external feed line 19 and can distribute the compressed air to the outgoing line 24 in a proportioned manner.

The line 24 leads to a distributor 25, in this case a double distributor, from which the compressed air is conveyed to the adhesive cylinders 2 and 3. A line 26 runs from the distributor 25 to the inlet of a quick-action ventilating valve 27. The quick-action ventilating valve 27 comprises a diaphragm 28, a diaphragm cover 29 and a tube cover 30. The valve with the inlet is attached to the adhesive cylinder by means of a tube nut 31.

The quick-action ventilating valve ensures that the pressure build-up in the adhesive cylinder is reduced very rapidly when the push-button valve is released. This prevents adhesive continuing to be pressed out of the adhesive strip. For safety reasons, the quick-action ventilating valve 27 is connected to the piston 6 via a cord connection in order to prevent the piston being ejected in the event of unintentional actuation of the push-button valve.

For filling of the adhesive cylinder, the piston is moved in the direction of the quick-action ventilating valve 27. After the adhesive bag has been introduced, the nut 12M is attached to the adhesive cylinder tube.

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The device is thus ready for use. Two sealing rings 32 and 33 can also be seen in the drawing.

Figure 4 shows a dispensing device 34 which has a third
5 adhesive cylinder 35 in addition to the two adhesive
cylinders 2 and 3, the adhesive strip 36 accordingly
having three nozzles 10 which end in the cavity 16,
from which, however, in each case four ducts 37a, 37b,
37c and 37d branch off, the adhesive strip accordingly
10 having three sets of four dispensing openings 38a, 38b,
38c and 38d. The adhesive strip has the same rollers 15
as the adhesive strip for two adhesive cylinders and
the same construction.

15 The compressed-air supply takes place in the same way
as in the first illustrative embodiment, the handle 31
being mounted on the central cylinder 2, and a triple
distributor 38 being present instead of a double
distributor 25, so that the compressed air is conducted
20 both to the adhesive cylinder 2 and, via lines 26 and
57, to the other two adhesive cylinders 3 and 35. The
functioning and the pistons etc. are identical to those
of the first illustrative embodiment.

25 In the illustrative embodiment according to Figures 7
and 8, a variant embodiment is illustrated, in which no
compressed air is required for dispensing the adhesive,
but mechanical driving of the dispensing piston takes
place. This has the advantage that a compressed-air
30 line, which is not available everywhere, is not
required and that attention does not have to be paid to
a, frequently irritating, supply hose.

In a similar way to the device 1, the device 42 has two
35 adhesive cylinders 43 and 44, which are interconnected
via the same spectacle-type supports 17 and 18. The
cylinder outlet 12 and the nozzles and in particular

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the adhesive strip are the same as in the first illustrative embodiment.

5 The adhesive is dispensed by means of a threaded rod 45, which is arranged between the two adhesive cylinders and is guided by bearings 46 and 47. The threaded rod can have a hexagon socket 48 at one of its ends, for example, so as to be driven by a device such as is found on a building site, for example a cordless
10 drill. The bearing arrangements 46, 47 are ball bearing arrangements known per se and are not explained in detail here.

The threaded rod 45 is connected to the two pistons 52
15 via a nut piece 49 and a continuous piston connection 50. The piston connection is connected to the piston via a connecting piece 51, which is attached to the two-part piston 52. The piston 52 consists of a front part 53 and a guide 54 at a spacing, the connecting
20 piece 51 being attached to both parts.

The front part of the piston is of the same design as in the previous illustrative embodiments in order to dispense the adhesive as completely as possible. The
25 adhesive cylinder is closed at the top with a screw cover 55. In order to allow the movement of the piston connection, the adhesive cylinder tube 56 is slotted, as emerges from Fig. 7. For filling of the adhesive cylinder, the nut piece is, with the piston, drawn in
30 the direction of the screw cover, after which the adhesive bags can be introduced and the adhesive strip can be attached by means of the nuts 12M.

Starting from this example with two adhesive cylinders,
35 devices with more than two adhesive cylinders with a mechanical piston drive are also possible, the mechanical propulsion having to be adapted. The drive of the threaded rod or of a similar arrangement can

also take place by means of drives other than cordless drills or the like, for example via an electric motor or the like, again preferably operated by batteries or rechargeable batteries.

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Starting from the illustrative embodiments described above according to Figures 1 - 8, it can be seen that both devices with one adhesive cylinder and a correspondingly adapted adhesive strip and devices with
10 more than three adhesive cylinders are possible, in each case the adhesive strip being made in a similar way and consisting of two parts and having two castors arranged on the two sides. It is a common feature of all adhesive strips that they are coated with an
15 adhesive-repellent plastic in order for it to be possible to perform very rapid cleaning. The adhesive containers do not necessarily have to be adhesive cylinders; other shapes are also possible.

20 Figures 9 and 10 illustrate a further illustrative embodiment, which brings about considerable simplification. The adhesive strip 57 is connected to a device 58 which has three adhesive cylinders 59, 60 and 61, in a similar way to in the device 34, the same
25 parts being provided with the same reference numbers and the other parts of the device being the same as those described previously.

Departing from the previous examples, the adhesive
30 strip 57 is made in one piece from an adhesive-repellent plastic and has a continuous longitudinal duct 62, in which the outlets 63 - 65 of a transition piece 66 end, the longitudinal duct 62 serving as a cavity, from which outlet ducts 67 extend, which end in
35 the dispensing openings 68.

As can be seen from Figure 10, the housing 69 of the adhesive strip is not of symmetrical design in relation

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to the dispensing openings 68, as these are arranged above the apex of the tapering housing. In Figure 10, "above" means the position in relation to the device when used on a floor. This ensures a better, more
5 uniform adhesive flow.

The asymmetrical position of the dispensing openings is also advantageous for the adhesive strips 4 and 36 described previously.

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The adhesive strip 57 has similar rollers 15 to those described previously, which are attached to a rectangular tube 70, which extends above the adhesive strip inlets. This allows the three transition pieces
15 66 with the funnel-shaped nozzles 9 and the outlets 63 - 65 and also the nuts 12M, which serve for receiving and attaching the adhesive cylinders 59 - 61 with the adhesive bags, to be attached thereto, which brings about a further simplification. The rectangular tube 70
20 is attached to the housing 69 by means of two lateral sheet-metal strips 71, which extend on the two sides. The rollers 15 are likewise attached to the lateral metal sheets 71, on the inside.